NCBI PubMed National Library of Medicine NLM

PubMed Nucleotide Protein Genome Structure PopSet Taxonomy OMIM Books

Search PubMed for hpv and vaccine AND peptide Go Clear

Limits Preview/Index History Clipboard Details

Display Summary Sort Save Text Clip Add Order

Show: 100 Items 1-54 of 54 One page.

Entrez PubMed

PubMed Services

Related Resources

1: Williams OM, Hart KW, Wang EC, Gelder CM. Related Articles

Analysis of CD4(+) T-Cell Responses to Human Papillomavirus (HPV) Type 11 L1 in Healthy Adults Reveals a High Degree of Responsiveness and Cross-Reactivity with Other HPV Types.

J Virol. 2002 Aug;76(15):7418-29.

PMID: 12097554 [PubMed - in process]

2: Zwaveling S, Mota SC, Nouta J, Johnson M, Lipford GB, Offringa R, Van Der Burg SH, Melief CJ. Related Articles

Established human papillomavirus type 16-expressing tumors are effectively eradicated following vaccination with long peptides.

J Immunol. 2002 Jul 1;169(1):350-8.

PMID: 12077264 [PubMed - in process]

3: Klencke B, Matijevic M, Urban RG, Lathey JL, Hedley ML, Berry M, Thatcher J, Weinberg V, Wilson J, Darragh T, Jay N, Da Costa M, Palefsky JM. Related Articles

Encapsulated plasmid DNA treatment for human papillomavirus 16-associated anal dysplasia: a Phase I study of ZYC101.

Clin Cancer Res. 2002 May;8(5):1028-37.

PMID: 12006515 [PubMed - in process]

4: Wolkers MC, Toebes M, Okabe M, Haanen JB, Schumacher TN. Related Articles

Optimizing the efficacy of epitope-directed DNA vaccination.

J Immunol. 2002 May 15;168(10):4998-5004.

PMID: 11994451 [PubMed - indexed for MEDLINE]

5: Gunn GR, Zubair A, Peters C, Pan ZK, Wu TC, Paterson Y. Related Articles

Two Listeria monocytogenes vaccine vectors that express different molecular forms of human papilloma virus-16 (HPV-16) E7 induce qualitatively different T cell immunity that correlates with their ability to induce regression of established tumors immortalized by HPV-16.

J Immunol. 2001 Dec 1;167(11):6471-9.

PMID: 11714814 [PubMed - indexed for MEDLINE]

6: Slupetzky K, Shafti-Keramat S, Lenz P, Brandt S, Grassauer A, Sara M, Kirnbauer R. Related Articles

Chimeric papillomavirus-like particles expressing a foreign epitope on capsid surface loops.

J Gen Virol. 2001 Nov;82(Pt 11):2799-804.

PMID: 11602792 [PubMed - indexed for MEDLINE]

☐ **7:** Lamikanra A, Pan ZK, Isaacs SN, Wu TC, Paterson Y. Related Articles

Regression of established human papillomavirus type 16 (HPV-16) immortalized tumors in vivo by vaccinia viruses expressing different forms of HPV-16 E7 correlates with enhanced CD8(+) T-cell responses that home to the tumor site.
J Virol. 2001 Oct;75(20):9654-64.
PMID: 11559797 [PubMed - indexed for MEDLINE]

☐ **8:** Castellanos MR, Hayes RL, Maiman MA. Related Articles

Synthetic peptides induce a cytotoxic response against human papillomavirus type-18.
Gynecol Oncol. 2001 Jul;82(1):77-83.
PMID: 11426965 [PubMed - indexed for MEDLINE]

☐ **9:** Castellanos MR, Weinstein G, Hayes RL. Related Articles

A rapid method to identify cytotoxic T-lymphocyte peptide epitopes from HLA-A2 (+) donors.
Crit Rev Oncol Hematol. 2001 Jul-Aug;39(1-2):133-8.
PMID: 11418310 [PubMed - indexed for MEDLINE]

☐ **10:** Weijzen S, Meredith SC, Velders MP, Elmishad AG, Schreiber H, Kast WM. Related Articles

Pharmacokinetic differences between a T cell-tolerizing and a T cell-activating peptide.
J Immunol. 2001 Jun 15;166(12):7151-7.
PMID: 11390461 [PubMed - indexed for MEDLINE]

☐ **11:** Rudolf MP, Fausch SC, Da Silva DM, Kast WM. Related Articles

Human dendritic cells are activated by chimeric human papillomavirus type-16 virus-like particles and induce epitope-specific human T cell responses in vitro.
J Immunol. 2001 May 15;166(10):5917-24.
PMID: 11342606 [PubMed - indexed for MEDLINE]

☐ **12:** Small LA, Da Silva DM, de Visser KE, Velders MP, Fisher SG, Potkul RK, Kast WM. Related Articles

A murine model for the effects of pelvic radiation and cisplatin chemotherapy on human papillomavirus vaccine efficacy.
Clin Cancer Res. 2001 Mar;7(3 Suppl):876s-881s.
PMID: 11300486 [PubMed - indexed for MEDLINE]

☐ **13:** Kaufmann AM, Nieland J, Schinz M, Nonn M, Gabelsberger J, Meissner H, Muller RT, Jochmus I, Gissmann L, Schneider A, Durst M. Related Articles

HPV16 L1E7 chimeric virus-like particles induce specific HLA-restricted T cells in humans after in vitro vaccination.
Int J Cancer. 2001 Apr 15;92(2):285-93.
PMID: 11291058 [PubMed - indexed for MEDLINE]

☐ **14:** van der Burg SH, Ressing ME, Kwappenberg KM, de Jong A, Straathof K, de Jong J, Geluk A, van Meijgaarden KE, Franken KL, Ottenhoff TH, Fleuren GJ, Kenter G, Melief CJ, Offringa R. Related Articles

Natural T-helper immunity against human papillomavirus type 16 (HPV16) E7-derived peptide epitopes in patients with HPV16-positive cervical lesions: identification of 3 human leukocyte antigen class II-restricted epitopes.
Int J Cancer. 2001 Mar 1;91(5):612-8.

PMID: 11267969 [PubMed - indexed for MEDLINE]

☐ **15:** Kawana K, Kawana Y, Yoshikawa H, Taketani Y, Yoshiike K, Kanda T. Related Articles

Nasal immunization of mice with peptide having a cross-neutralization epitope on minor capsid protein L2 of human papillomavirus type 16 elicit systemic and mucosal antibodies.
Vaccine. 2001 Jan 8;19(11-12):1496-502.
PMID: 11163673 [PubMed - indexed for MEDLINE]

☐ **16:** Schiller J, Lowy D. Related Articles

Papillomavirus-like particle vaccines.
J Natl Cancer Inst Monogr. 2001;(28):50-4.
PMID: 11158207 [PubMed - in process]

☐ **17:** Indrova M, Bubenik J, Simova J, Vonka V, Nemeckova S, Mendoza L, Reinis M. Related Articles

Therapy of HPV 16-associated carcinoma with dendritic cell-based vaccines: in vitro priming of the effector cell responses by DC pulsed with tumour lysates and synthetic RAHYNIVTF peptide.
Int J Mol Med. 2001 Jan;7(1):97-100.
PMID: 11115616 [PubMed - indexed for MEDLINE]

☐ **18:** Osen W, Jochmus I, Muller M, Gissmann L. Related Articles

Immunization against human papillomavirus infection and associated neoplasia.
J Clin Virol. 2000 Oct;19(1-2):75-8.
PMID: 11091150 [PubMed - indexed for MEDLINE]

☐ **19:** Muderspach L, Wilczynski S, Roman L, Bade L, Felix J, Small LA, Kast WM, Fascio G, Marty V, Weber J. Related Articles

A phase I trial of a human papillomavirus (HPV) peptide vaccine for women with high-grade cervical and vulvar intraepithelial neoplasia who are HPV 16 positive.
Clin Cancer Res. 2000 Sep;6(9):3406-16.
PMID: 10999722 [PubMed - indexed for MEDLINE]

☐ **20:** Cornelison TL. Related Articles

Human papillomavirus genotype 16 vaccines for cervical cancer prophylaxis and treatment.
Curr Opin Oncol. 2000 Sep;12(5):466-73. Review.
PMID: 10975555 [PubMed - indexed for MEDLINE]

☐ **21:** Bourgault Villada I, Beneton N, Bony C, Connan F, Monsonego J, Bianchi A, Saiag P, Levy JP, Guillet JG, Choppin J. Related Articles

Identification in humans of HPV-16 E6 and E7 protein epitopes recognized by cytolytic T lymphocytes in association with HLA-B18 and determination of the HLA-B18-specific binding motif.
Eur J Immunol. 2000 Aug;30(8):2281-9.
PMID: 10940919 [PubMed - indexed for MEDLINE]

☐ **22:** Ressing ME, van Driel WJ, Brandt RM, Kenter GG, de Jong JH, Bauknecht T, Fleuren GJ, Hoogerhout P, Offringa R, Sette A, Celis E, Grey H, Trimbos BJ, Kast WM, Melief CJ. Related Articles

Detection of T helper responses, but not of human papillomavirus-specific cytotoxic T lymphocyte responses, after peptide vaccination of patients with

cervical carcinoma.
J Immunother. 2000 Mar-Apr;23(2):255-66.
PMID: 10746552 [PubMed - indexed for MEDLINE]

☐ **23:** Liu DW, Tsao YP, Kung JT, Ding YA, Sytwu HK, Xiao X, Chen SL. Related Articles
Recombinant adeno-associated virus expressing human papillomavirus type 16 E7 peptide DNA fused with heat shock protein DNA as a potential vaccine for cervical cancer.
J Virol. 2000 Mar;74(6):2888-94.
PMID: 10684306 [PubMed - indexed for MEDLINE]

☐ **24:** Azoury-Ziadeh R, Herd K, Fernando GJ, Frazer IH, Tindle RW. Related Articles
T-helper epitopes identified within the E6 transforming protein of cervical cancer-associated human papillomavirus type 16.
Viral Immunol. 1999;12(4):297-312.
PMID: 10630789 [PubMed - indexed for MEDLINE]

☐ **25:** Ji H, Wang TL, Chen CH, Pai SI, Hung CF, Lin KY, Kurman RJ, Pardoll DM, Wu TC. Related Articles
Targeting human papillomavirus type 16 E7 to the endosomal/lysosomal compartment enhances the antitumor immunity of DNA vaccines against murine human papillomavirus type 16 E7-expressing tumors.
Hum Gene Ther. 1999 Nov 20;10(17):2727-40.
PMID: 10584920 [PubMed - indexed for MEDLINE]

☐ **26:** van Driel WJ, Ressing ME, Kenter GG, Brandt RM, Krul EJ, van Rossum AB, Schuuring E, Offringa R, Bauknecht T, Tamm-Hermelink A, van Dam PA, Fleuren GJ, Kast WM, Melief CJ, Trimbos JB. Related Articles
Vaccination with HPV16 peptides of patients with advanced cervical carcinoma: clinical evaluation of a phase I-II trial.
Eur J Cancer. 1999 Jun;35(6):946-52.
PMID: 10533477 [PubMed - indexed for MEDLINE]

☐ **27:** Kawana K, Yoshikawa H, Taketani Y, Yoshiike K, Kanda T. Related Articles
Common neutralization epitope in minor capsid protein L2 of human papillomavirus types 16 and 6.
J Virol. 1999 Jul;73(7):6188-90.
PMID: 10364381 [PubMed - indexed for MEDLINE]

☐ **28:** Murakami M, Gurski KJ, Marincola FM, Ackland J, Steller MA. Related Articles
Induction of specific CD8+ T-lymphocyte responses using a human papillomavirus-16 E6/E7 fusion protein and autologous dendritic cells.
Cancer Res. 1999 Mar 15;59(6):1184-7.
PMID: 10096544 [PubMed - indexed for MEDLINE]

☐ **29:** Smahel M, Sobotkova E, Vonka V, Hamsikova E, Zak R, Kitasato H, Ludvikova V. Related Articles
DNA vaccine against oncogenic hamster cells transformed by HPV16 E6/E7 oncogenes and the activated ras oncogene.
Oncol Rep. 1999 Jan-Feb;6(1):211-5.
PMID: 9864430 [PubMed - indexed for MEDLINE]

☐ **30:** Duggan-Keen MF, Brown MD, Stacey SN, Stern PL. Related Articles

Papillomavirus vaccines.
Front Biosci. 1998 Dec 1;3:D1192-208. Review.
PMID: 9835649 [PubMed - indexed for MEDLINE]

☐31: Vierboom MP, Feltkamp MC, Neisig A, Drijfhout JW, ter Schegget J, Neefjes JJ, Melief CJ, Kast WM. Related Articles

Peptide vaccination with an anchor-replaced CTL epitope protects against human papillomavirus type 16-induced tumors expressing the wild-type epitope.
J Immunother. 1998 Nov;21(6):399-408.
PMID: 9807734 [PubMed - indexed for MEDLINE]

☐32: Steller MA, Gurski KJ, Murakami M, Daniel RW, Shah KV, Celis E, Sette A, Trimble EL, Park RC, Marincola FM. Related Articles

Cell-mediated immunological responses in cervical and vaginal cancer patients immunized with a lipidated epitope of human papillomavirus type 16 E7.
Clin Cancer Res. 1998 Sep;4(9):2103-9.
PMID: 9748126 [PubMed - indexed for MEDLINE]

☐33: Yoon H, Chung MK, Min SS, Lee HG, Yoo WD, Chung KT, Jung NP, Park SN. Related Articles

Synthetic peptides of human papillomavirus type 18 E6 harboring HLA-A2.1 motif can induce peptide-specific cytotoxic T-cells from peripheral blood mononuclear cells of healthy donors.
Virus Res. 1998 Mar;54(1):23-9.
PMID: 9660068 [PubMed - indexed for MEDLINE]

☐34: De Bruijn ML, Schuurhuis DH, Vierboom MP, Vermeulen H, de Cock KA, Ooms ME, Ressing ME, Toebes M, Franken KL, Drijfhout JW, Ottenhoff TH, Offringa R, Melief CJ. Related Articles

Immunization with human papillomavirus type 16 (HPV16) oncoprotein-loaded dendritic cells as well as protein in adjuvant induces MHC class I-restricted protection to HPV16-induced tumor cells.
Cancer Res. 1998 Feb 15;58(4):724-31.
PMID: 9485027 [PubMed - indexed for MEDLINE]

☐35: Tuting T, DeLeo AB, Lotze MT, Storkus WJ. Related Articles

Genetically modified bone marrow-derived dendritic cells expressing tumor-associated viral or "self" antigens induce antitumor immunity in vivo.
Eur J Immunol. 1997 Oct;27(10):2702-7.
PMID: 9368629 [PubMed - indexed for MEDLINE]

☐36: Speidel K, Osen W, Faath S, Hilgert I, Obst R, Braspenning J, Momburg F, Hammerling GJ, Rammensee HG. Related Articles

Priming of cytotoxic T lymphocytes by five heat-aggregated antigens in vivo: conditions, efficiency, and relation to antibody responses.
Eur J Immunol. 1997 Sep;27(9):2391-9.
PMID: 9341785 [PubMed - indexed for MEDLINE]

☐37: Gill D, Cason J, Punchard N. Related Articles

Immunogenic properties of human papilloma virus type 16 (HPV-16) E5 polypeptide.
Biochem Soc Trans. 1997 May;25(2):281S. No abstract available.
PMID: 9191325 [PubMed - indexed for MEDLINE]

☐ **38:** Nindl I, Gissmann L, Fisher SG, Bribiesca LB, Berumen J, Muller M. Related Articles

The E7 protein of human papillomavirus (HPV) type 16 expressed by recombinant vaccinia virus can be used for detection of antibodies in sera from cervical cancer patients.
J Virol Methods. 1996 Oct;62(1):81-5.
PMID: 8910651 [PubMed - indexed for MEDLINE]

☐ **39:** Wu TC, Guarnieri FG, Staveley-O'Carroll KF, Viscidi RP, Levitsky HI, Hedrick L, Cho KR, August JT, Pardoll DM. Related Articles, Free in PMC

Engineering an intracellular pathway for major histocompatibility complex class II presentation of antigens.
Proc Natl Acad Sci U S A. 1995 Dec 5;92(25):11671-5.
PMID: 8524826 [PubMed - indexed for MEDLINE]

☐ **40:** Bauer S, Heeg K, Wagner H, Lipford GB. Related Articles

Identification of H-2Kb binding and immunogenic peptides from human papilloma virus tumour antigens E6 and E7.
Scand J Immunol. 1995 Sep;42(3):317-23.
PMID: 7660065 [PubMed - indexed for MEDLINE]

☐ **41:** Ossevoort MA, Feltkamp MC, van Veen KJ, Melief CJ, Kast WM. Related Articles

Dendritic cells as carriers for a cytotoxic T-lymphocyte epitope-based peptide vaccine in protection against a human papillomavirus type 16-induced tumor.
J Immunother Emphasis Tumor Immunol. 1995 Aug;18(2):86-94.
PMID: 8574470 [PubMed - indexed for MEDLINE]

☐ **42:** Tindle RW, Croft S, Herd K, Malcolm K, Geczy AF, Stewart T, Fernando GJ. Related Articles

A vaccine conjugate of 'ISCAR' immunocarrier and peptide epitopes of the E7 cervical cancer-associated protein of human papillomavirus type 16 elicits specific Th1- and Th2-type responses in immunized mice in the absence of oil-based adjuvants.
Clin Exp Immunol. 1995 Aug;101(2):265-71.
PMID: 7544248 [PubMed - indexed for MEDLINE]

☐ **43:** Ressing ME, Sette A, Brandt RM, Ruppert J, Wentworth PA, Hartman M, Oseroff C, Grey HM, Melief CJ, Kast WM. Related Articles

Human CTL epitopes encoded by human papillomavirus type 16 E6 and E7 identified through in vivo and in vitro immunogenicity studies of HLA-A*0201-binding peptides.
J Immunol. 1995 Jun 1;154(11):5934-43.
PMID: 7538538 [PubMed - indexed for MEDLINE]

☐ **44:** Ellis JR, Keating PJ, Baird J, Hounsell EF, Renouf DV, Rowe M, Hopkins D, Duggan-Keen MF, Bartholomew JS, Young LS, et al. Related Articles

The association of an HPV16 oncogene variant with HLA-B7 has implications for vaccine design in cervical cancer.
Nat Med. 1995 May;1(5):464-70.
PMID: 7585096 [PubMed - indexed for MEDLINE]

☐ **45:** Heino P, Skyldberg B, Lehtinen M, Rantala I, Hagmar B, Kreider JW, Kirnbauer R, Dillner J. Related Articles

Human papillomavirus type 16 capsids expose multiple type-restricted and type-common antigenic epitopes.

J Gen Virol. 1995 May;76 (Pt 5):1141-53.
PMID: 7537325 [PubMed - indexed for MEDLINE]

☐ **46:** Lipford GB, Bauer S, Wagner H, Heeg K. Related Articles
Peptide engineering allows cytotoxic T-cell vaccination against human papilloma virus tumour antigen, E6.
Immunology. 1995 Feb;84(2):298-303.
PMID: 7751006 [PubMed - indexed for MEDLINE]

☐ **47:** Sarkar AK, Tortolero-Luna G, Nehete PN, Arlinghaus RB, Mitchell MF, Sastry KJ. Related Articles
Studies on in vivo induction of cytotoxic T lymphocyte responses by synthetic peptides from E6 and E7 oncoproteins of human papillomavirus type 16.
Viral Immunol. 1995;8(3):165-74.
PMID: 8833270 [PubMed - indexed for MEDLINE]

☐ **48:** Fernando GJ, Stenzel DJ, Tindle RW, Merza MS, Morein B, Frazer IH. Related Articles
Peptide polymerisation facilitates incorporation into ISCOMs and increases antigen-specific IgG2a production.
Vaccine. 1995;13(15):1460-7.
PMID: 8578827 [PubMed - indexed for MEDLINE]

☐ **49:** Ruppert J, Kubo RT, Sidney J, Grey HM, Sette A. Related Articles
Class I MHC-peptide interaction: structural and functional aspects.
Behring Inst Mitt. 1994 Jul;(94):48-60. Review.
PMID: 7998914 [PubMed - indexed for MEDLINE]

☐ **50:** Feltkamp MC, Smits HL, Vierboom MP, Minnaar RP, de Jongh BM, Drijfhout JW, ter Schegget J, Melief CJ, Kast WM. Related Articles
Vaccination with cytotoxic T lymphocyte epitope-containing peptide protects against a tumor induced by human papillomavirus type 16-transformed cells.
Eur J Immunol. 1993 Sep;23(9):2242-9.
PMID: 7690326 [PubMed - indexed for MEDLINE]

☐ **51:** Kast WM, Brandt RM, Drijfhout JW, Melief CJ. Related Articles
Human leukocyte antigen-A2.1 restricted candidate cytotoxic T lymphocyte epitopes of human papillomavirus type 16 E6 and E7 proteins identified by using the processing-defective human cell line T2.
J Immunother. 1993 Aug;14(2):115-20.
PMID: 7506573 [PubMed - indexed for MEDLINE]

☐ **52:** Tindle RW, Fernando GJ, Sterling JC, Frazer IH. Related Articles, **Free in PMC**
A "public" T-helper epitope of the E7 transforming protein of human papillomavirus 16 provides cognate help for several E7 B-cell epitopes from cervical cancer-associated human papillomavirus genotypes.
Proc Natl Acad Sci U S A. 1991 Jul 1;88(13):5887-91.
PMID: 1712110 [PubMed - indexed for MEDLINE]

☐ **53:** Tindle RW, Smith JA, Geysen HM, Selvey LA, Frazer IH. Related Articles
Identification of B epitopes in human papillomavirus type 16 E7 open reading frame protein.
J Gen Virol. 1990 Jun;71 (Pt 6):1347-54.
PMID: 1693666 [PubMed - indexed for MEDLINE]

☐ **54:** Jenkins O, Cason J, Burke KL, Lunney D, Gillen A, Patel D, McCance DJ, Almond JW. Related Articles

An antigen chimera of poliovirus induces antibodies against human papillomavirus type 16.

J Virol. 1990 Mar;64(3):1201-6.
PMID: 2154604 [PubMed - indexed for MEDLINE]

PMID: 9748126 [PubMed - indexed for MEDLINE]

Display Abstract Sort Save Text Clip Add Order

1: Clin Cancer Res 1998 Sep;4(9):2103-9 Related Articles, Books, LinkOut

Cell-mediated immunological responses in cervical and vaginal cancer patients immunized with a lipidated epitope of human papillomavirus type 16 E7.

Steller MA, Gurski KJ, Murakami M, Daniel RW, Shah KV, Celis E, Sette A, Trimble EL, Park RC, Marincola FM.

Section of Gynecologic Oncology, Surgery Branch, Cancer Therapy Evaluation Program, National Cancer Institute, Bethesda, Maryland 20892, USA. msteller@wihri.org

Human papillomavirus (HPV) infection has been causally associated with cervical cancer. We tested the effectiveness of an HLA-A*0201-restricted, HPV-16 E7 lipopeptide vaccine in eliciting cellular immune responses in vivo in women with refractory cervical cancer. In a nonrandomized Phase I clinical trial, 12 women expressing the HLA-A2 allele with refractory cervical or vaginal cancer were vaccinated with four E786-93 lipopeptide inoculations at 3-week intervals. HLA-A2 subtyping was also performed, and HPV typing was assessed on tumor specimens. Induction of epitope-specific CD8+ T-lymphocyte (CTL) responses was analyzed using peripheral blood leukapheresis specimens obtained before and after vaccination. CTL specificity was measured by IFN-gamma release assay using HLA-A*0201 matched target cells. Clinical responses were assessed by physical examination and radiographic images. All HLA-A*0201 patients were able to mount a cellular immune response to a control peptide. E786-93-specific CTLs were elicited in 4 of 10 evaluable HLA-A*0201 subjects before vaccination, 5 of 7 evaluable HLA-A*0201 patients after two vaccinations, and 2 of 3 evaluable HLA-A*0201 cultures after all four inoculations. Two of three evaluable patients' CTLs converted from unreactive to reactive after administration of all four inoculations. There were no clinical responses or treatment toxicities. The ability to generate specific cellular immune responses is retained in patients with advanced cervical cancer. Vaccination with a lipidated HPV peptide epitope appears capable of safely augmenting CTL reactivity. Although enhancements of cellular immune responses are needed to achieve therapeutic utility in advanced cervical cancer, this approach might prove useful in treating preinvasive disease.

Publication Types:
- Clinical Trial

1: J Immunother 1998 Nov;21(6):399-408 Related Articles, Books, LinkOut

Peptide vaccination with an anchor-replaced CTL epitope protects against human papillomavirus type 16-induced tumors expressing the wild-type epitope.

Vierboom MP, Feltkamp MC, Neisig A, Drijfhout JW, ter Schegget J, Neefjes JJ, Melief CJ, Kast WM.

Department of Immunohematology & Blood Bank, University Hospital Leiden, The Netherlands.

Anchor residues in cytotoxic T-lymphocyte (CTL) epitope-bearing peptides are buried deep in the major histocompatibility complex (MHC) class I antigen-presenting groove and are essential for binding to MHC class I molecules. We investigated whether anchor residue replacement affects the ability of a CTL epitope to be bound and transported by MHC class I molecules and transporter associated with antigen (TAP), respectively, and affects its functionality in vivo. Therefore, both anchor residues, at positions 5 and 9, of the H-2Db-restricted CTL epitope HPV16 E7 49-57 RAHYNIVTF were systematically exchanged for one of the 19 other naturally occurring amino acid (AA). Only replacement at anchor position 9 with residues V, I, L, or M, which are documented Db motif-anchor residues at that position, allowed binding to the MHC class I H-2Db molecule as well as transport by TAP with the same efficiency as the wild-type epitope. In B6 mice (H-2b), these anchor-modified peptide epitopes efficiently induced CTL that specifically recognized the wild-type epitope. Conversely, wild-type epitope-induced CTL recognized the V9-, I9-, L9-, and M9-replaced epitopes, respectively. In terms of tumor protection against a challenge with HPV16-transformed cells, the V9-replaced epitope was as efficient as the wild-type epitope E7 49-57. Taken together, our data demonstrate that specific CTL epitope anchor replacements are allowed with respect to MHC class I binding and TAP transport, as well as with respect to antigenicity and immunogenicity in vivo. The results presented are relevant to CTL epitope-based peptide vaccine development.

PMID: 9807734 [PubMed - indexed for MEDLINE]